

# Claims

1. A polyacetal resin composition comprising:

(I) a polyacetal resin; and per 100 parts by

5 weight thereof,

(II) more than 5 parts by weight but less than

100 parts by weight of calcium carbonate, wherein the

calcium carbonate has an average particle diameter of

from 0.1  $\mu\text{m}$  to less than 1.5  $\mu\text{m}$  and an average aspect

10 ratio (L/D) which is a ratio of average major axis (L) of

particles to average minor axis (D) of particles of 3 or

less;

(III) 0.005 to 10 parts by weight of an organic

acid; and

15 (IV) 0 to less than 0.05 parts by weight of a

fatty acid ester,

wherein the amount of Na relative to Ca is 250

ppm or less and the amount of Sr relative to Ca is from

500 to 2500 ppm.

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2. The polyacetal resin composition according to

claim 1, wherein the amount of Na relative to Ca in the

composition is 100 ppm or less.

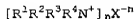
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3. The polyacetal resin composition according to

claim 1 or 2, wherein the amount of Sr relative to Ca in the composition is from 600 to 1500 ppm.

4. The polyacetal resin composition according to  
5 any one of claims 1 to 3, wherein formaldehyde-generating rates, at the time when the polyacetal resin (I) is heated at 220°C under an argon stream, for heating periods of from 2 minutes to 10 minutes, from 10 minutes to 30 minutes and from 50 minutes to 90 minutes are each 15  
10 ppm/min.

5. The polyacetal resin composition according to any one of claims 1 to 4, wherein the polyacetal resin (I) is a heat-stabilized polyacetal resin obtained by  
15 treating to stabilize thermally unstable terminals with at least one quaternary ammonium compound represented by the following formula:



wherein  $R^1, R^2, R^3, R^4$  each independently represents an  
20 unsubstituted or substituted alkyl group having 1 to 30 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group in which an unsubstituted or substituted alkyl group having 1 to 30 carbon atoms is substituted  
25 with at least one aryl group having 6 to 20 carbon atoms, or an alkylaryl group in which an aryl group having 6 to

20 carbon atoms is substituted with at least one unsubstituted or substituted alkyl group having 1 to 30 carbon atoms, provided that the unsubstituted or substituted alkyl group may be any of linear, branched or cyclic, and that in the unsubstituted alkyl group, aryl group, aralkyl group or alkylaryl group, hydrogen atom(s) may be substituted with halogen(s); n represents an integer of 1 to 3; and X represents a hydrogen atom, or an acid residue of a carboxylic acid having 1 to 20 carbon atoms, a hydroacid, an oxo acid, an inorganic thio acid or an organic thio acid having 1 to 20 carbon atoms.

6. The polyacetal resin composition according to any one of claims 1 to 5, wherein the polyacetal resin (I) is a copolymer having a melting point of 164 to 172°C.

7. The polyacetal resin composition according to any one of claims 1 to 6, wherein the calcium carbonate (II) is light calcium carbonate.

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8. The polyacetal resin composition according to any one of claims 1 to 7, wherein the calcium carbonate (II) has an average particle diameter of from 0.1  $\mu\text{m}$  to 1.0  $\mu\text{m}$ .

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9. The polyacetal resin composition according to any one of claims 1 to 9, wherein the calcium carbonate (II) has a content of particles having a particle diameter of 1  $\mu\text{m}$  or less of 90% or more.

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10. The polyacetal resin composition according to any one of claims 1 to 9, wherein the calcium carbonate (II) has a BET specific surface area of from 10 to 200  $\text{m}^2/\text{g}$ .

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11. The polyacetal resin composition according to any one of claims 1 to 10, wherein the calcium carbonate (II) comprises spherical particles, cubic particles, rectangular particles, amorphous particles, or a mixture thereof.

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12. The polyacetal resin composition according to any one of claims 1 to 11, wherein the organic acid (III) is a saturated fatty acid having 8 to 36 carbon atoms.

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13. The polyacetal resin composition according to any one of claims 1 to 12, wherein the fatty acid ester (IV) is an ester of a fatty acid having 10 to 24 carbon atoms with a monohydric or polyhydric alcohol

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having 2 to 22 carbon atoms.

14. A polyacetal resin composition comprising the polyacetal resin composition according to any one of  
5 claims 1 to 13 and further (V) 0.1 to 10 parts by weight of a polyalkylene glycol per 100 parts by weight of the polyacetal resin composition.

15. The polyacetal resin composition according  
10 to claim 14, wherein the polyalkylene glycol (V) is polyethylene glycol or polypropylene glycol.

16. The polyacetal resin composition according to claim 14 or 15, wherein the polyalkylene glycol (V)  
15 has a number-average molecular weight of from 10,000 to 45,000.

17. A process for producing a polyacetal resin composition comprising a step of simultaneously melt-  
20 kneading:

(I) a polyacetal resin; and per 100 parts by weight thereof,

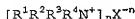
(II) more than 5 parts by weight but less than 100 parts by weight of calcium carbonate which has an  
25 average particle diameter of from 0.1  $\mu\text{m}$  to less than 1.5

μm and an average aspect ratio (L/D) which is a ratio of average major axis (L) of particles to average minor axis (D) of particles of 3 or less and which is not surface-treated with a saturated fatty acid, unsaturated fatty acid and metal salt thereof having 8 to 32 carbon atoms; and

(III) 0.005 to 10 parts by weight of an organic acid, at melting point of the polyacetal resin (I) or higher.

16. The process according to claim 17, wherein formaldehyde-generating rates, at the time when the polyacetal resin (I) is heated at 220°C under an argon stream, for heating periods of from 2 minutes to 10 minutes, from 10 minutes to 30 minutes and from 50 minutes to 90 minutes are each 15 ppm/min or less.

19. The process according to claim 17 or 18, wherein the polyacetal resin (I) is a heat-stabilized polyacetal resin obtained by treating to stabilize thermally unstable terminals with at least one quaternary ammonium compound represented by the following formula:



wherein  $R^1, R^2, R^3, R^4$  each independently represents an unsubstituted or substituted alkyl group having 1 to 30

carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group in which an unsubstituted or substituted alkyl group having 1 to 30 carbon atoms is substituted with at least one aryl group having 6 to 20 carbon atoms, 5 or an alkylaryl group in which an aryl group having 6 to 20 carbon atoms is substituted with at least one unsubstituted or substituted alkyl group having 1 to 30 carbon atoms, provided that the unsubstituted or substituted alkyl group may be any of linear, branched or 10 cyclic, and that in the unsubstituted alkyl group, aryl group, aralkyl group or alkylaryl group, hydrogen atom(s) may be substituted with halogen(s); n represents an integer of 1 to 3; and X represents a hydrogen atom, or an acid residue of a carboxylic acid having 1 to 20 15 carbon atoms, a hydroacid, an oxo acid, an inorganic thio acid or an organic thio acid having 1 to 20 carbon atoms.

20. The process according to any one of claims 17 to 19, wherein the polyacetal resin (I) is a copolymer 20 having a melting point of 164 to 172°C.

21. The process according to any one of claims 17 to 20, wherein in the calcium carbonate (II), the amount of Na relative to Ca is 250 ppm or less and the 25 amount of Sr relative to Ca is from 500 to 2500 ppm.

22. The process according to any one of claims 17 to 21, wherein the calcium carbonate (II) is light calcium carbonate.

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23. The process according to any one of claims 17 to 22, wherein the calcium carbonate (II) has an average particle diameter of from 0.1  $\mu\text{m}$  to 1.0  $\mu\text{m}$ .

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24. The process according to any one of claims 17 to 23, wherein the calcium carbonate (II) has a content of particles having a particle diameter of 1  $\mu\text{m}$  or less of 90% or more.

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25. The process according to any one of claims 17 to 24, wherein the calcium carbonate (II) has a BET specific surface area of from 10 to 200  $\text{m}^2/\text{g}$ .

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26. The process according to any one of claims 17 to 25 wherein the calcium carbonate (II) comprises spherical particles, cubic particles, rectangular particles, amorphous particles, or a mixture thereof.

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27. The process according to any one of claims 17 to 26, wherein the organic acid (III) is a saturated



fatty acid having 8 to 36 carbon atoms.